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SIEMENS CORPORATION
INTELLECTUAL PROPERTY DEPARTMENT
170 WOOD AVENUE SOUTH
ISELIN, NJ 08830

EXAMINER

MCDOWELL, LIAM J

ART UNIT	PAPER NUMBER
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3745

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10/05/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/585,955	Applicant(s) BALDAUF ET AL.	
	Examiner LIAM MCDOWELL	Art Unit 3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 11-20 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 11-18 is/are rejected.
- 8) ☒ Claim(s) 19 and 20 is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☒ The specification is objected to by the Examiner.
- 11) ☒ The drawing(s) filed on 13 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7/13/06 and 12/5/07</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because the abstract includes the implied phrase "The invention relates" and also includes legal phraseology such as "the platform comprises", "said vane" and "said first platform". Correction is required. See MPEP § 608.01(b).

3. The disclosure is objected to because of the following informalities:

Page 10, line 1 "platform 23" should be --platform 33--.

Page 12, line 10 "designs" should be deleted.

Page 14, line 2 "interspaces 69" should be --interspaces--. Element 69 was previously used (page 11, line 4) to denote a second platform wall.

Page 15, line 1 "blade 67" should be --blade 63--. Appropriate correction is required.

Claim Objections

4. Claims 11-17 are objected to because of the following informalities:

Claim 11, line 5 “extends” should be –extending—for grammatical consistency. Claims 12-17 are objected to based on their dependence.

Claim 13, line 2 “the step” should be –the set-back step—for proper antecedence. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 11-14 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 99/60253 to Tiemann.

In Reference to Claim 11

Tiemann discloses a turbine blade¹⁵, comprising:

a blade leaf 25 arranged along a blade axis 19 having a blade tip (near 1 – Fig. 2), a root (near 22 – Fig. 2) opposite the tip, a suction side and a pressure side (inherent in an airfoil shaped vane as seen in Fig. 1);

a platform region 21 arranged at the root of the blade leaf;

a platform 23 arranged at the platform region having a width (defining space 27) and extends transversely with respect to the blade axis (see Fig. 2);

a first platform wall 35 arranged along the transition from the blade leaf to the platform that does not structurally support the blade leaf and has along the width of the platform an aerodynamic shape (element 35 is formed along the contour of the blade and thus, has an aerodynamic shape); and

a second platform wall (at 23) arranged in the platform region that structurally supports and is continuous with the blade leaf and has, along the width of the platform, a set-back step with respect to the first platform. A step-back step is broadly construed as step creating recess 27 (see step supporting cover 35 in Fig. 3).

In Reference to Claim 12

Tiemann discloses the turbine blade as claimed in claim 11 (as discussed above), wherein an interspace for cooling the platform is formed between the aerodynamic shape of the first platform wall and the set-back step of the second platform wall. See cavity 28.

In Reference to Claim 13

Tiemann discloses the turbine blade as claimed in claim 12 (as discussed above), wherein the interspace has a uniform height defined along the entire width of the platform by a height of the step. See Fig. 2.

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In Reference to Claim 14

Tiemann discloses the turbine blade as claimed in claim 11 (as discussed above), wherein the second platform wall thickness is greater the first platform wall thickness. See Fig. 2.

In Reference to Claim 17

Tiemann discloses the turbine blade as claimed in claim 11 (as discussed above), wherein the platform extends on both the pressure and suction sides of the blade leaf. See Figs. 1 and 2.

7. Claims 11, 12, 14, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,950,113 to Albrecht.

In Reference to Claim 11

Albrecht discloses a turbine blade (see title), comprising:

- a blade leaf 16 arranged along a blade axis having a blade tip (near 16 – Fig. 1), a root (near 14 – Fig. 2) opposite the tip, a suction side and a pressure side (inherent in an airfoil shaped vane as seen in Fig. 3);

- a platform region (near 15) arranged at the root of the blade leaf;

- a platform 15 arranged at the platform region having a width (defining space 25) and extends transversely with respect to the blade axis (see Fig. 2);

- a first platform wall 24 arranged along the transition from the blade leaf to the platform that does not structurally support the blade leaf and has along the

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width of the platform an aerodynamic shape (element 24 is formed along the contour of the blade and thus, has an aerodynamic shape); and

a second platform wall (at 15) arranged in the platform region that structurally supports and is continuous with the blade leaf and has, along the width of the platform, a set-back step with respect to the first platform. See Fig.3 with recesses 23 set back with respect to plate 24. Please note that the claim does not require the set-back to be along the entire width of the platform, only along the width (arranged in a width direction).

In Reference to Claim 12

Albrecht discloses the turbine blade as claimed in claim 11 (as discussed above), wherein an interspace for cooling the platform is formed between the aerodynamic shape of the first platform wall and the set-back step of the second platform wall. See pocket 25.

In Reference to Claim 14

Albrecht discloses the turbine blade as claimed in claim 11 (as discussed above), wherein the second platform wall thickness is greater the first platform wall thickness. See Fig. 2.

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In Reference to Claim 16

Albrecht discloses the turbine blade as claimed in claim 11 (as discussed above), wherein the first platform wall is formed by a resilient elastic sheet metal part arranged adjacent the blade leaf. See column 1, lines 8-9.

In Reference to Claim 17

Albrecht discloses the turbine blade as claimed in claim 11 (as discussed above), wherein the platform extends on both the pressure and suction sides of the blade leaf. See Figs. 2 and 3.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tiemann.

In Reference to Claim 15

Tiemann discloses the turbine blade as claimed in claim 11 (as discussed above), but does not explicitly disclose wherein the second platform wall has a plurality of cooling passages per unit area greater along the transition from the

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blade leaf to the platform than in the remainder of the platform region. However, Tiemann discloses a plurality of cooling passages 47 in the transition region and a plurality of passages 45 in the remainder of the platform region.

The number of passages in the transition region could be 1) the same, 2) less than, or 3) greater than the number of passages else where in the platform. It would have been obvious to one of ordinary skill in the art at the time the invention was made to try each of the above three option in order to optimize the cooling of the blade, because changing the number and location of the cooling passages produces predictable results with respect to cooling.

10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Albrecht in view of Applicant's Admitted Prior Art (AAPA).

In Reference to Claim 18

Albrecht discloses a gas turbine, comprising:

- a plurality of annularly arranged turbine blades 16,

- wherein each turbine blade comprises:

- a blade axis perpendicular to the turbine axis,

- a blade tip (near 16 – Fig. 1),

- a blade root (near 14 –Fig. 2) arranged radially opposite the blade tip,

- a blade platform 15 arranged adjacent to the blade root and extending

transverse to the blade axis (see Fig. 2),

a blade profile having an airfoil shape arranged between the blade tip and the blade root (see Fig. 3), wherein:

a first platform wall 24 formed from a resilient elastic metal sheet (see column 1, lines 8-9) arranged along a transition from the blade profile to the blade platform that does not structurally support the blade profile and has along a width of the platform an aerodynamically advantageous curved shape (element 24 is formed along the contour of the blade and thus, has an aerodynamic shape), and

a second platform wall (at 15) arranged along a transition from the blade profile to the blade platform that structurally supports and is continuous with the blade profile and has, along the width of the platform, a set-back step with respect to the first platform (see Fig. 3 with recesses 23 set back with respect to plate 24). Please note that the claim does not require the set-back to be along the entire width of the platform, only along the width (arranged in a width direction), and a retaining stop to retain the first platform wall (see column 2, line 66 to column 3, line 3).

Albrecht does not explicitly disclose that the gas turbine comprises a flow duct extending along an axis of the turbine having an annular cross section for a working medium; and a plurality of blade stages with blades that extend radially into the flow duct arranged one after another along the axis of the turbine.

Page 1, lines 11-35 of the present application disclose that a ducted turbine having a plurality of stages is a conventional configuration for a gas turbine. It would have been obvious to one of ordinary skill in the art at the time the

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invention was made to modify the turbine of Albrecht to be part of a gas turbine with a flow duct and a plurality of turbine stages as such a configuration is a conventional configuration for housing the turbine blades of Albrecht.

Allowable Subject Matter

11. Claims 19 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: The closest prior art to Albrecht teaches a stop on the outside edge of the platform. During the rotary operation of a rotating turbine blade a centrifugal force acting radially outward from the root of the blade profile toward the blade tip that is generated as a result of the blade rotation would tend to move the sheet metal away from such a stop. Albrecht does not teach or reasonably suggest that the resilient elastic sheet metal first platform wall is pressed against the retaining stop by the centrifugal force and is fastened in place by centrifugal force as recited in claim 19. Albrecht does not teach or suggest that a pressure drop is generated and that the resilient elastic sheet metal first platform wall is pressed against the retaining stop by the pressure drop and thereby fastened by the resulting pressure as recited in claim 20.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 3,967,353 and US 5,122,033 are cited for the teaching of a non-load bearing transition portion of a platform.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to LIAM MCDOWELL whose telephone number is (571)270-1611. The examiner can normally be reached on Monday-Friday 9:00 am-5:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, EDWARD LOOK can be reached on (571)272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LIAM MCDOWELL/
Examiner, Art Unit 3745

/EDWARD LOOK/
Supervisory Patent Examiner, Art Unit 3745